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PHYSICAL ANTHROPOLOGY

Kraniologische Untersuchungen niassischer Schädel. VON KLEIWEG DE ZWAAN, J. B. VIII, 263 pp., 1 map, 156 figures and 2 tables.—Appendix: Zoologische Resultate, pp. 265–325. Martinus Nijhoff: Haag, 1915.

With the present third volume Kleiweg de Zwaan's Nias work comes to its conclusion. The first volume (1914) treated of "Die Heilkunde der Niasser," the second one (1914) of "Anthropologische Untersuchungen über die Niasser" (see review in vol. 17, No. 2, of this periodical). The systematic and scientific treatment of the material in the third volume also is carried out thoroughly and with care. The studies on the Nias skull by Bleeker, van der Hoeven, Swaving, Vrolik, Meyer, ten Kate, Schaaffhausen, Quatrefages, Hamy, Rüdinger, Danielli, and Zuckerkandl, only few in number and of earlier date, are severally reviewed by the author and utilized by him in comparing results in the course of his investigations. The anthropological literature on the Malay archipelago and peninsula is also frequently quoted. The material subjected to investigation consisted of 32 skulls from different sections of the island of Nias and collected by the author himself. Together with the skulls treated in the literature quoted above, the material ran up to more than a hundred specimens. A determination of sex was not attempted on account of the generally "gracile" formation of the skull. Asymmetries of the skull are quite frequent. Still they do not seem to be the results of attempts to correct obvious malformation of the newborn infant's head since such attempts are practised to a very slight degree and only for a very short time (pp. 231–235). Projections of the frontal bone are hardly noticeable, the supra-orbital region especially protrudes very little. The index of protrusion of the frontal bone amounts to 86.02, indicating together with the bregmatic angle of 58.10 only a slight protrusion of inclination, respectively. The orbits are of rectangular shape and large, this being an especially conspicuous feature if one considers the relative smallness of the skull. Their transverse diameter is slightly inclined. The *Pars nasalis* of the frontal bone proved to be of considerable length (10.6 mm.) relatively to the morphological height of the face. In this it corresponds to like conditions in R. Martin's *Inlandstämme der malaiischen Halbinsel* (8 mm.), and Sarasin's *Veddas*. In all these instances the frontal bone takes a large part in forming the medial partition of the orbit. The shallowness of the *fossa canina* seems to be another characteristic of the Niassers; Baelz first reported it from

the Japanese, but it is found also among the Battaks, Burmese, Chinese, Ainu. Of very frequent occurrence among the Nias skulls is the almost flat bridge of the nose with its occasionally saddle-like depression, the nasal bones lying nearly in one plane. They project, in such cases, to only a small extent over the frontal processes of the upper jaw. In a number of skulls the medial and lateral edges of the *nasalia* are of equal length; the lower edges of these bones are thus cut off evenly and the *apertura piriformis* receives a rectangular appearance. The *squama temporalis* is small and low. The zygomatic and mastoid processes are weakly developed. In the latter the *incisura mastoidea* as well as the *fossa glenoidalis* are quite shallow. The condyloid processes are as a rule small, closely approaching in front. In the parietal and occipital bones protrusions are not pronounced, a condition that holds true also for the reliefs of the bones.

The examination of the cranial sutures showed a lesser frequency for the obliteration of the sagittal one than for the obliteration of the *suturæ coronaria* and *spheno-frontalis*. This disposition is not found so regularly in other series, and is explained in detailed lists. Another characteristic seems to be the shortness of the *spheno-parietal* suture.

The cranial index, with an average of 77.0, indicates mesocephaly; its components amount to 171.6 mm. for the length, and 131.5 mm. for the width. For all three groups of the index the differences in length were greater than those in breadth. The latter measurement is for this reason the more constant one. The two dimensions just spoken of vary, however, more in the brachycephalous than in the dolichocephalous cases. These latter comprised 42.22% of the entire series, while the mesocephals ran up to only 30.77% and the brachycephals to 26.92%. Of great interest is Kleiweg's method of contrasting these figures with those obtained by him on 1,297 living Niassers (volume II of his work), of which 10.49% were dolichocephalic, 39.67% mesocephalic, and 51.43% brachycephalic. These results are exactly in inverse proportion to the skull measurements. From the fact that dolicho-, meso-, and brachycephaly occur side by side in large percental proportions in his skull series, the author infers that the population of Nias is of heterogeneous composition.

The height of the skull was determined according to the methods of Broca, Schwalbe, and E. Schmidt. It must suffice to speak of the first one only, which yielded a value of 130.6 mm. The higher values are united in the long-headed group, the lower in the short-headed one. The length-height index is hypsicephalic, with 76.5 units. According

to all these measurements the Nias skull appears as pretty long and narrow, but relatively not very high. The horizontal circumference 490.4 mm. is rather small. The components of the sagittal circumference amount to 145.5 mm. for the nasion-bregma arch, to 125.8 mm. for the bregma-lambda arch and to 112.5 mm. for the lambda-opisthion arch. Although these mean figures cover a considerable variety of individual variations, they still clearly demonstrate in general a receding of size of the occipital section. The inclination of the frontal bone is demonstrated by Schwalbe's "bregma angle" (bregma-glabella by glabella-inion), which amounts to 58.11 and thus falls within the range of variation given by Schwalbe for modern man (53°-66°).

In the facial region nose and eye are of special interest. The nasal index of 52.05, mesorrhin, takes in the average length of 46.3 mm. of the nose, and its width of 24.1 mm. Applied to the three groups of the cranial index, every one of these shows a mesorrhin average. Among 27 skulls examined there are six leptorrhin specimens, eight that are mesorrhin and thirteen platyrrhin ones, showing a prevalence of the broad and short noses. Taking further into consideration that among the dolichocephals are found five platyrrhin, three mesorrhin and three leptorrhin ones, one is tempted to assume mixture because in the long heads long and narrow noses might be expected as a rule (p. 167). Such conditions are more constant in the brachycephals, indicating probably a slight influence of crossing on this group.

For the orbital width the *lacrimale* was used as the medial measuring point. It may be a matter of general knowledge that the Martin school has substituted the *maxillo-frontale* instead, i. e., that point where a prolongation of the medial margin of the orbital orifice in the down-upward direction meets the *sutura fronto-maxillaris*. This method has turned out to be very reliable. Kleiweg makes extensive use also of Kalkhof's method of orbital measurements (Josef Kalkhof, *Beiträge zur Anthropologie der Orbita*, Inaug. Diss., Freiburg, 1911), inclosing the orbital contours (Martin's dioptograph) in rectangles. Direct measurements, as well as angles, can thus easily be taken. The average width of the *orbita*, the *lacrimale* being employed, amounts to 36 mm., its height to 32.5 mm. giving rise to an index of 91.5, which the author terms "hypsophthalm." This index is of far more frequent occurrence in the brachycephals than in the dolichocephals. Contrary to all expectation, the bi-orbital width of 89.7 mm. in the brachycephals is also smaller than in the dolichocephals, where it amounts to 91.8 mm.

Puccioni's method was employed for the examination of the lower jaw

(Nello Puccioni, "Ricerche sui rapporti digrandezza tra corpo i ramo ascendente nella mandibola" *Arch.p. l'Anthropologia e la Etnologia*, vol. XLI, fasc. 1. Firenze, 1911). This author proposes six different ethnical types for the lower jaw, based on the differences especially of the height-width index of the *ramus* and the same index of the *corpus mandibulae*. Both authors arrive at different conclusions, as far as the racial affiliations of the lower jaw of the Nias man are concerned. While Kleiweg holds that the Niasser's jaw comes nearest to the Australoid type, Puccioni defines its character as Negroid.

Drawing his final conclusions Kleiweg compares the facial, nasal, and orbital indices to each of the three groups of the cranial index. Low and broad faces with flat and broad noses and broad and low orbits are found very frequently among the dolichocephalic skulls. Conversely there are many specimens among the brachycephalic ones with long and narrow noses, and high and narrow orbits. These correlations might be explained as effectuated by crossing, if one does not prefer to assume an aboriginal dolichocephalic type with a broad face and a broad nose. This peculiar type probably did not originate solely by means of crossing, for, if the brachycephalic element was not one of pure type, it hardly could have forced purely typical characteristics upon the dolichocephalic element, among which even more chamaeprosopic cases are found than among the brachycephals.

At the close of the anthropological chapters are found tables containing the outline drawings of the skulls examined in side and front views, photographic reproductions of the skulls, and a comprehensive list of literature. In the text a good many photographs are shown of somatic types, some of these reproductions from the originals preserved in the Rotterdam Museum. Pages 267-314 are filled with the zoological studies on fishes, amphibia, reptiles, and insects from Nias, for which science is indebted to Max Weber, L. F. de Beaufort, P. N. van Kampen, Nelly de Rooy, and C. Ritsema.

J. P. Kleiweg de Zwaan's Nias work represents a contribution of decided merit to literature on physical anthropology. It is with sincere pleasure that the reviewer is able to state this in justification of his lengthy and detailed review.

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